

In the Claims:

Please cancel claims 1-15, 18-28, 30 and 33, without prejudice.

1-15. (Canceled)

16. (Original) A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal arranged between said pair of the substrates;

a plurality of stripe electrodes and an alignment layer formed in one of said substrates;

an alignment layer formed in the other substrate;

said stripe electrodes including first and second groups of stripe electrodes parallel to each other, the first group of the stripe electrodes being supplied with a first voltage, and the second group of stripe electrodes being supplied with a second voltage different from the first voltage; and

an insulating layer covering at least one of the first and second groups of stripe electrodes and arranged under the alignment layer.

17. (Original) A liquid crystal display apparatus according to claim 16, wherein a volume resistivity of the insulating layer is larger than a volume resistivity of the alignment layer.

18-28. (Canceled)

29. (Original) A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal arranged between said pair of substrates;

a plurality of stripe electrodes and an alignment layer formed in one of said substrates;

an alignment layer formed on the other substrate; and

said stripe electrodes including first and second groups of stripe electrodes parallel to each other, the first group of the stripe electrodes being supplied with a first voltage, and the second group of stripe electrodes being supplied with a second voltage different from the first voltage;

an insulating layer formed in said one substrate under the alignment layer to cover the first and second groups of stripe electrodes, said insulating layer being partially removed in the vicinity of at least one of the first and second groups of stripe electrodes.

30. (Canceled)

31. (Original) A liquid crystal display apparatus comprising:

- a pair of substrates;
- a liquid crystal arranged between said pair of the substrates;
- a plurality of stripe electrodes and an alignment layer formed in one of said substrates;
- a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;
- a sealed liquid injection hole; and
- a dielectric layer inserted between said transparent electrode and said liquid crystal layer, a region of said dielectric layer in the vicinity of a side of the liquid crystal display apparatus far from the liquid crystal injection hole being partially removed.

32. (Original) A liquid crystal display apparatus comprising:

- a pair of substrates;
- a liquid crystal arranged between said pair of substrates;
- a plurality of stripe electrodes and an alignment layer formed in one of said substrates;
- a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in said other substrate;
- a sealed liquid injection hole; and

an insulating layer formed in said one substrate under said alignment layer to cover said stripe electrodes, a region of said insulating layer in the vicinity of a side of the liquid crystal display apparatus far from the liquid crystal injection hole being partially removed.

33. (Canceled)

34. (Original) A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal arranged between said pair of substrates;

a plurality of stripe electrodes and an alignment layer formed in one of said substrates;

an alignment layer formed in the other substrate;

said stripe electrodes including first and second groups of stripe electrodes parallel to each other, the first group of the stripe electrodes being supplied with a first voltage, the second group of the stripe electrodes being supplied with a second voltage different from the first voltage;

said one substrate further including gate bus lines, data bus lines crossing said gate bus lines and TFTs; and

a gate electrode of said thin film transistor being electrically connected to the n th gate bus line, a drain electrode of said thin film transistor being electrically connected to the m th data bus line, a source electrode of said thin film transistor being electrically connected to one of the stripe electrodes of said first group, one of the stripe electrodes of said second group being electrically connected to the $(n+1)$ th gate bus line.

35. (Original) A liquid crystal display apparatus according to claim 34, wherein said first and second groups of the stripe electrodes are arranged in parallel to the data bus lines, and said second group of the stripe electrodes partially overlap the data bus lines.

36. (Original) A liquid crystal display apparatus according to claim 34, wherein said gate bus lines are supplied, at selected timings, with a reference voltage for determining a voltage of said second group of the stripe electrodes at the time of writing display data, a first voltage for turning said TFT on and a second voltage for turning TFT off.

37. (Original) A liquid crystal display apparatus according to claim 36, wherein when writing display data to a pixel connected to the n th gate bus line, said n th gate bus line is set to said first voltage, said $(n+1)$ th gate bus line is set to said reference voltage, and the other gate bus lines are set to said second voltage.

38. (Original) A liquid crystal display apparatus comprising:

- a pair of substrates;
- a liquid crystal arranged between said pair of substrates;
- a plurality of stripe electrodes and an alignment layer formed in one of said substrates;
- an alignment layer formed in the other substrate;
- said stripe electrodes including first and second groups of stripe electrodes parallel to each other, the first group of stripe electrodes being supplied with a first voltage, the second group of stripe electrodes being supplied with a second voltage different from the first voltage;
- said one substrate further including gate bus lines, data bus lines crossing said gate bus lines, and first TFTs and second TFTs;
- a gate electrode of said first TFT being electrically connected to the n th gate bus line, a drain electrode of said first TFT being electrically connected to the m th data bus line, a source electrode of said first TFT being electrically connected to one of the stripe electrodes of said first group; and
- a gate electrode of said second TFT being electrically connected to the n th gate bus line, a drain electrode of said second TFT being electrically connected to the $(n+1)$ th gate bus line, a source electrode of said second TFT being electrically connected to one of the stripe electrodes of said second group.

39. (Original) A liquid crystal display apparatus according to claim 38, wherein said first TFT and said second TFT have a common gate electrode.

40. (Original) A liquid crystal display apparatus according to claim 38, wherein said gate bus lines are supplied, at selected timings, with a reference voltage for determining a voltage of said second group of the stripe electrodes at the time of writing display data, a first voltage for turning said first TFT and said second TFT on, and a second voltage for turning said first TFT and said second TFT off.

41. (Original) A liquid crystal display apparatus according to claim 40, wherein, when writing display data to the pixel connected to the n th gate bus line, said n th gate bus line is set to said first voltage, said $(n+1)$ th gate bus line is set to said reference voltage, and the other gate bus lines are set to said second voltage.

42. (Original) A liquid crystal display apparatus comprising:
a pair of substrates;
a liquid crystal inserted between said pair of substrates;
an electrode and an alignment layer formed in one of said substrates;
an alignment layer formed in the other substrate;

said one substrate further including gate bus lines, data bus lines crossing said gate bus lines and TFTs;

said other substrate including a black matrix for shielding pixel regions from each other and a color filter with color filter components for determining color of the transmitted light for each pixel region;

a plurality of pixels; and

said color filter component extending from one pixel region to the adjacent pixel region beyond said black matrix, said black matrix being covered by at least two color filter components, a width of the overlapping portion of said two color filter components being larger than a width of said black matrix.

43. (Original) A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal inserted between said pair of substrates;

an electrode and an alignment layer formed in one of said substrates;

an alignment layer formed in the other substrate;

said alignment layer of said one substrate being formed to cover said electrode; and

said alignment layer of said other substrate having electrical characteristics different from those of said alignment layer of said one substrate.

44. (Original) A liquid crystal display apparatus according to claim 43, wherein a volume resistivity of said alignment layer of said one substrate is smaller than a volume resistivity of said alignment layer of said other substrate.

45. (Original) A liquid crystal display apparatus according to claim 44, wherein a volume resistivity of said liquid crystal is closer to the volume resistivity of the alignment layer of said one substrate than to the volume resistivity of said alignment layer of said other substrate.

46. (Original) A liquid crystal display apparatus comprising:
a pair of substrates;
a liquid crystal inserted between said pair of substrates;
first and second electrodes and an alignment layer covering said first and second electrodes formed in one of said substrates;
an alignment layer formed in said other substrate;
said first and second electrodes being supplied with mutually different voltages so that an electric field may be formed between said first and second electrodes; and
a chiral agent added to said liquid crystal.

47. (Original) A liquid crystal display apparatus according to claim 46, wherein one of said alignment layer of said one substrate and said alignment layer of said other substrate is a horizontal alignment layer, and the other alignment layer is a vertical alignment layer.

48. (Original) A liquid crystal display apparatus according to claim 47, wherein the direction of alignment of said horizontal alignment layer is parallel to the direction of the electric field generated between said first electrode and said second electrode.

49. (Original) A liquid crystal display apparatus according to claim 46, wherein the ratio d/p between the thickness d of the liquid crystal layer and the natural twist pitch p of said liquid crystal is 0.125 to 3.

50. (Original) A liquid crystal display apparatus according to claim 46, wherein the product $\Delta n d$ of the double refractive index Δn of said liquid crystal and the thickness d of the liquid crystal layer is in the range of 0.7 ± 0.2 .

51. (Original) A liquid crystal display apparatus according to claim 47, wherein each pixel includes therein a plurality of regions where said horizontal alignment layer is treated to provide alignments in different directions.

52. (Original) A liquid crystal display panel comprising:
an optically transparent first substrate,
a second substrate arranged in opposed relation to said first substrate;
a liquid crystal inserted between said first substrate and said second substrate;
said first substrate having an alignment layer;
said second substrate having a reflection layer, first and second stripe electrodes parallel to each other and an alignment layer; and
said first stripe electrode being located substantially at the center of a pixel, said second stripe electrode being arranged at the boundary between adjacent two pixels, said first and second stripe electrodes being adapted to generate an electric field therebetween.

53. (Original) A liquid crystal display panel comprising:
an optically transparent first substrate;
a second substrate arranged in opposed relation to said first substrate;

a liquid crystal inserted between said first substrate and said second substrate;

said first substrate having first stripe electrodes and an alignment layer;

said second substrate having a reflection layer, second stripe electrodes parallel to said first stripe electrodes and an alignment layer; and

said first stripe electrode being located substantially at the center of a pixel, said second stripe electrode being arranged at the boundary between adjacent two pixels, said first and second stripe electrodes being adapted to generate an electric field therebetween.

54. (Original) A liquid crystal display panel comprising:

an optically transparent first substrate;

a second substrate arranged in opposed relation to said first substrate;

a liquid crystal inserted between said first substrate and said second substrate;

said first substrate having first and second stripe electrodes parallel to each other and an alignment layer;

said second substrate having a reflection layer and an alignment layer;

and

said first stripe electrode being located substantially at the center of a pixel, said second stripe electrode being arranged at the boundary between adjacent two pixels, said first and second stripe electrodes being adapted to generate an electric field therebetween.

55. (Original) A liquid crystal display panel comprising:

an optically transparent first substrate;

a second substrate arranged in opposed relation to said first substrate;

a liquid crystal inserted between said first substrate and said second substrate;

said first substrate having first and second stripe electrodes parallel to each other and an alignment layer;

said second substrate having a reflection layer, third and fourth electrodes parallel to each other and extending in such a direction as to cross said first and second stripe electrodes, and an alignment layer;

said first stripe electrode being located substantially at the center of a pixel, said second stripe electrodes being arranged at the boundary between adjacent two pixels, said first and second stripe electrodes being adapted to generate an electric field therebetween; and

said third stripe electrode being located substantially at the center of a pixel, said fourth stripe electrode being arranged at the boundary between adjacent two pixels, said third and fourth stripe electrodes being adapted to generate an electric field between said first and second stripe electrodes.

56. (Original) A liquid crystal display panel comprising:

an optically transparent first substrate;

a second substrate arranged in opposed relation to said first substrate;

a guest-host liquid crystal inserted between said first substrate and said second substrate;

said first substrate having an alignment layer;

said second substrate having a reflection layer, an insulating layer functioning as a $1/4$ wavelength plate, first and second parallel stripe electrodes and an alignment layer; and

said first stripe electrodes being located substantially at the center of a pixel, said second stripe electrodes being arranged at the boundary between adjacent two pixels, said first and second stripe electrodes being adapted to generate an electric field therebetween.

57. (Original) A liquid crystal display apparatus comprising:

- a pair of substrates;
- a liquid crystal arranged between said pair of substrates;
- a plurality of stripe electrodes per pixel and an alignment layer formed in one of said substrates;
- a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;
- a dielectric layer arranged in said other substrate between said transparent electrode and said liquid crystal layer; and
- said dielectric layer having a surface formed in a curved shape such that a normal vector at a point on the surface of said dielectric layer is closer to a line which is parallel to an electric line of force penetrating that point than that when said dielectric layer has a surface formed in a planar shape.

58. (Original) A liquid crystal display apparatus comprising:

- pair of substrates;
- a liquid crystal arranged between said pair of substrates;
- a plurality of stripe electrodes per pixel and an alignment layer formed in one of said substrates;

a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;

an insulating layer arranged in said one substrate to cover said stripe electrodes; and

said insulating layer having openings above said stripe electrodes, said openings having tapered side walls.

59. (Original) A liquid crystal display apparatus comprising:

a pair of substrates;

a liquid crystal arranged between said pair of substrates;

a plurality of stripe electrodes per pixel and an alignment layer formed in one of said substrates;

a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;

a dielectric layer arranged in said other substrate between said transparent electrode and said liquid crystal layer; and

said dielectric layer satisfying a relationship of $0.5 < d/\epsilon$, where d is the thickness of a dielectric layer, and ϵ is a relative dielectric constant.

60. (Original) A liquid crystal display apparatus according to claim 59, wherein said dielectric layer satisfies a relationship of $0.5 < d/\epsilon < 0.9$.

61. (Original) A liquid crystal display apparatus comprising:
a pair of substrates;
a liquid crystal arranged between said pair of substrates;
a plurality of stripe electrodes per pixel and an alignment layer formed in one of said substrates;
a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;
a dielectric layer arranged in said other substrate between said transparent electrode and said liquid crystal layer; and
said dielectric layer comprising a color filter layer and a transparent resin layer.

62. (Original) A liquid crystal display apparatus according to claim 61, wherein a thickness of said transparent resin layer is greater than that of said color filter layer.

63. (Original) A liquid crystal display apparatus comprising:

- a pair of substrates;
- a liquid crystal arranged between said pair of substrates;
- a plurality of stripe electrodes per pixel and an alignment layer formed in one of said substrates;
- a transparent electrode covering substantially the whole surface of the other substrate and an alignment layer formed in the other substrate;
- a dielectric layer arranged in said other substrate between said transparent electrode and said liquid crystal layer; and
- said dielectric layer having an optical anisotropy.

64. (Original) A liquid crystal display apparatus according to claim 63, wherein said dielectric layer comprises a major dielectric layer and an alignment layer to cause said major dielectric layer to be aligned, said major dielectric material being applied onto said alignment layer and aligned, and being cured by irradiation of light or heating.